Researching Prior to Building is a Smart Move

Full Mitigation Best Practice Story

Galveston County, Texas

San Leon, TX—Before starting construction of their waterfront home in San Leon, Texas, George and Diana Click spent time researching safe building practices. They obtained information on choosing a builder, current building codes, coastal construction mitigation techniques, and adequate insurance coverage.

On September 13, 2008, Hurricane Ike brought high winds and a 12-foot storm surge to San Leon, a 5,000-acre peninsula located on Galveston Bay. The storm devastated the area and wiped out the local multi-million dollar fishing and shrimp industry. About 80 percent of the homes, businesses, and commercial fishing and shrimping boats were destroyed in the small, relatively unknown community of 4,944 residents. The Clicks' home was the only one left standing on their street.

"I didn't do anything extra," said George Click. "It's about following the codes. It's about knowing what to do." Galveston County adopted and enforces the International Residential Code (IRC) and the National Electrical Code for all residential construction in its jurisdiction. The Clicks discovered that this is an important form of hazard mitigation.

"The first thing we did was secure a certificate of elevation," said Diana Click. Elevation certificates, which are usually prepared by licensed surveyors, are important tools in floodplain management that document the elevation of structures in relation to the base flood elevation. The Clicks knew they would need to build up their low-lying land and the elevation certificate provided precise information about their site. To stay above the mean high tide, their first floor would need to be 11 feet high. They went up to 11 feet, 6 inches.

The Clicks chose a builder who had a long history in construction and monitored the construction process. Efforts were made to strengthen connections from the roof to the foundation, creating a "continuous load path." A load path is the route taken by a force, such as the pressure exerted by high wind, as it makes its way through a structure. When a building has a continuous load path, the force is eventually transferred to and resisted by the ground. A continuous load path usually requires the use of metal connectors, fasteners (like nails and screws) and strong wall design. Like a chain, a load path is only as strong as its weakest link.

"When the inspector came out to inspect the frame, the builder had it all strapped, and I thought it was done," George said. "But the inspector said, 'You don't have enough straps on the top. You have to fix that. And I will be back.' He had me so nervous I was going up at night, after the builder left, putting more straps. I wanted to keep the building process moving forward." Weather conditions and other factors caused delays, but eventually the Clicks became proud owners of a completed beach house.

To protect their investment, they purchased National Flood Insurance Program (NFIP) policies for both the structure and its contents. This insurance is available because their community has adopted floodplain management regulations that are designed to prevent loss of life and reduce damage to property.

"We did a lot of research prior to building. We needed as much education as we could get from FEMA and elsewhere regarding safe building practices," Diana said. "We've been talking with our neighbors. People really want to know the right way to build. I have been sharing the information that we have learned with them."

Activity/Project Location

Geographical Area:	**Single County in a State**
FEMA Region:	**Region VI**
State:	**Texas**
County:	**Galveston County**
City/Community:	**San Leon**

Key Activity/Project Information

Sector:	**Private**
Hazard Type:	**Flooding; Hurricane/Tropical Storm; Coastal Storm**
Activity/Project Type:	**Building Codes; Elevation, Structural; Elevation, Utilities**
Structure Type:	**Wood Frame**
Activity/Project Start Date:	**06/2004**
Activity/Project End Date:	**11/2005**
Funding Source:	**Homeowner**
Funding Recipient:	**Property Owner - Residential**

Activity/Project Economic Analysis

Cost:	**Amount Not Available**
Non FEMA Cost:	**0**

Activity/Project Disaster Information

Mitigation Resulted From Federal Disaster?	**No**
Value Tested By Disaster?	**Yes**
Tested By Federal Disaster #:	**1791 , 09/13/2008**
Repetitive Loss Property?	**No**

Reference URLs

Reference URL 1:	**http://www.fema.gov/library**

Main Points

- More information can be obtained from FEMA Publications:
- FEMA 312, Homeowner’s Guide to Retrofitting: Six Ways to Protect Your House from Flooding
- FEMA 499, Home Builders Guide to Coastal Construction
- FEMA 55, Coastal Construction Manual
- FEMA 257, Mitigation of Flood and Erosion Damage
- FEMA 347, Elevating Your Flood Prone Home
- FEMA 164, Against the Wind

Elevated home of George and Diana Click was the only home left standing on their street following Hurricane Ike

Elevated HVAC Unit at the Click's home

Home next door to the Clicks was left uninhabitable following Hurricane Ike